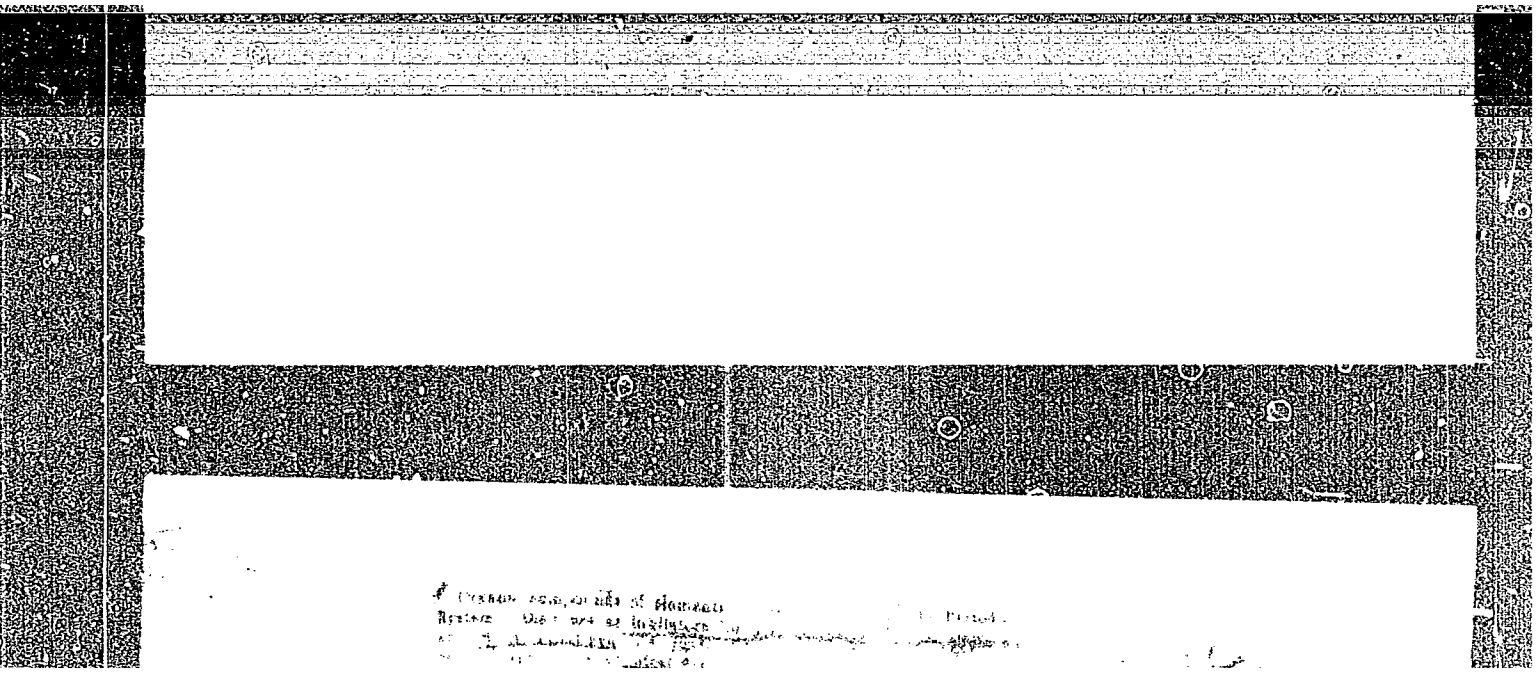
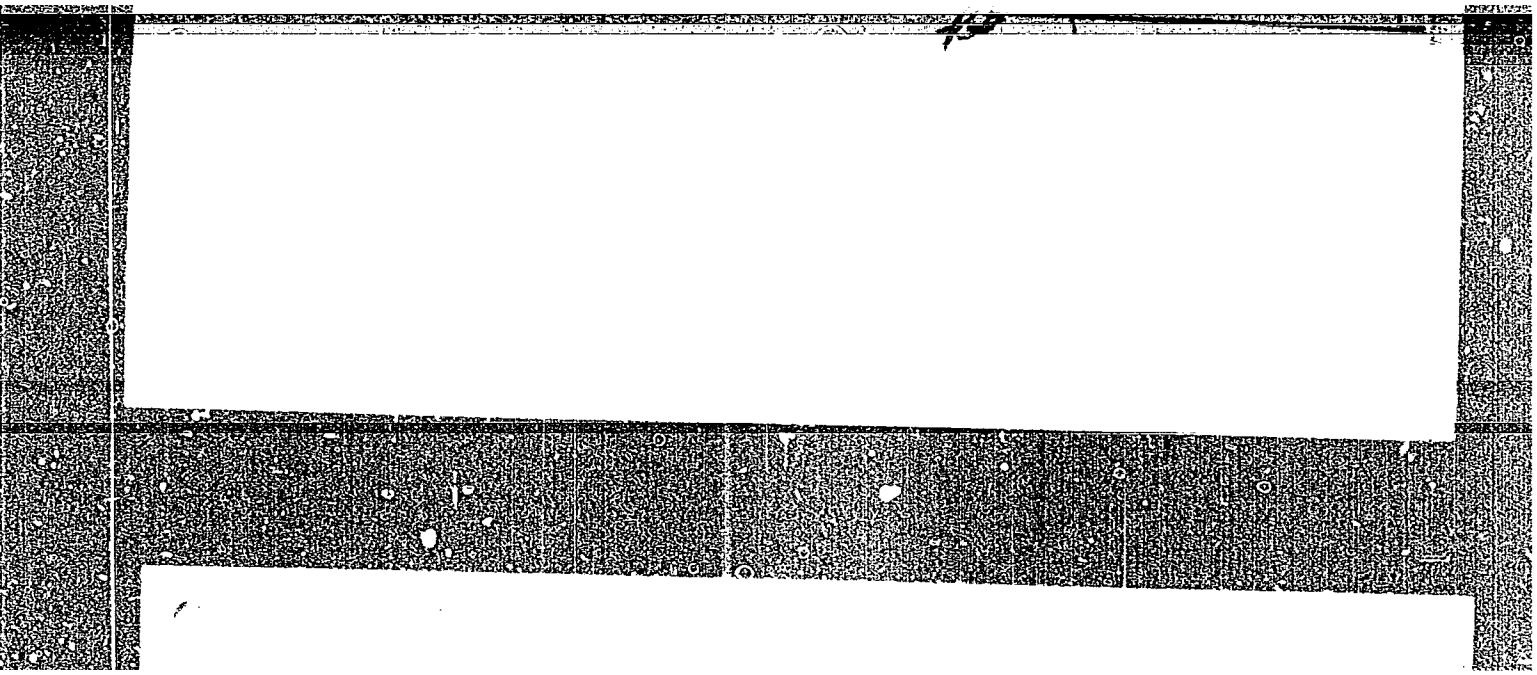
BALEZIN, Stepan Afanas'yevich; CHERKASSKAYA, P.M., redaktor; LUR'YE, M.S., [illegible]

[A practical manual of physical and colloidal chemistry] Rukovodstvo k prakticheskim zaniatiiam po fizicheskoi i kolloidnoi khimii. Izd. 2-oe, ispr. i dop. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1956. 232 p. (MLRA 10:3)
(Chemistry, Physical and theoretical) (Colloids)





APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103310006-7"

BALEZIN S.A.

USSR/Physical Chemistry. Electrochemistry. B-12

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22504.

Author : S. A. Balezin, M. A. Ignat'ev.
Inst : ~~Not given~~
Title : Influence of some Elementorganic Compounds on the Rate of Carbon Steel Solution in Inorganic Acids.

Orig Pub : Dokl. AN USSR, 1956, 109, No 4, 771-773.

Abstract : The influence of tetraphenyl elements bromides (TPE) $(C_6H_5)_4PBr$; $(C_6H_5)_4AsBr$; $(C_6H_5)_4SbBr$; of phosphorus containing organic compounds $(C_6H_5)_4PCl$; $(C_6H_5)_4PI$; $(C_6H_5)_3CH_3PI$; of trichloride of diphenyl elements $(C_6H_5)_2AsCl_3$; $(C_6H_5)_2SbCl_3$ and of triphenyl elements $(C_6H_5)_3N$; $(C_6H_5)_3As$; $(C_6H_5)_3Sb$; $(C_6H_5)_3P$; $(C_6H_5)_3Bi$, on the solution rate (SR) of steel-20 in H_2SO_4 (I-10n) and in HCl (I-5n) at 20° was studied by gravimetric methods. The surveyed substances in concentration $5 \cdot 10^{-4}$ M are sharply hindering steel solution; their action varies little with further concentration increase. Bromides and iodides of TPE (especially $(C_6H_5)_4PI$) have the greatest inhibitive effect. It is shown, with the aid of polarization curves, that these TPE have [illegible] effect on anodic and cathodic [illegible]

Card 1/2

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22504.

diminishes, in the presence of haloid TPE, with an increase in acids concentration till 6 n and does not vary at greater concentrations, whereas SR in HCl increases with greater acid concnetration. By method of marked atoms on sample surfaces etched in acid containing $(C_6H_5)_4PI$, I was discovered, and its quantity was 5-6 times more in case of H_2SO_4 than in case of HCl. The amount of I increased with the increase in H_2SO_4 concentration but did not vary with the increase in concentration of HCl.

Moskovskiy gosudarstvennyy pedagogicheskiy institut imeni V. I. Lenina.

BALYEZIN, S.A.

USSR/General Problems. A-

Abs Jour : Ref Zhur - Khimiya, No 10, 1957, 33381.

Author : Balyezin, S.A.
Inst :
Title : Dmitri Ivanovitch Mendelyeyev.

Orig Pub : Khimiya v shkole, 1957, No 1, 16-26.

Abstract : No abstract.

Card 1/1

SOV/123-59-16-64697

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1958, Nr 16, p 146 (USSR)

AUTHOR: Balezin, S.A.

TITLE: Theoretical Problems and Practical Tasks in the Field of Corrosion Inhibitors

PERIODICAL: Sb.Kom-t po korrozii i zashchite metallov Vses. sov. nauchn.-tekhn. o-v, 1957, Nr 2, 4 - 13

ABSTRACT: The operational mechanism of corrosion inhibitors consists in their forming local or uniform films and chemical surface compounds on the metallic surface or in the deactivation of the aggressive medium. In acid mediums inhibitors of the PB-5 grade are used for HCl and of the ChM grade for H_2SO_4; they considerably reduce corrosion and almost fully eliminate the hydrogen fragility of ferrous metals, and PB-5 in a solution of HCl slows down the dissolubility of Zn by 10,000 times. In alkaline solutions the most effective additive for Zn is sodium sulfide, while Al is fully protected from corrosion in a 0.1 n.solution of NaOH, to which 1% of sulfite pulp lye is added. In water the corrosion of ferrous metals

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Theoretical Problems and Practical Tasks in the Field of Corrosion Inhibitors

can be fully stopped by adding small quantities of organic amines. Under atmospheric conditions volatile inhibitors are used with great success - carbonate, monoethanolamine and sodium benzoate, which are buffer solutions, protecting successfully steel and some non-ferrous metals. Volatile inhibitors are introduced into the wrapping paper or grease. They might be applied to the manufactured article in the form of a solution in a volatile liquid and can also be used as a powder.

K.L.M.

80191
SOV/123-59-23-97191

18.8300

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 23, p 141 (USSR)

AUTHORS: Beskov, S.D., Balezin, S.A., Barannik, V.P.

TITLE: On the Mechanism of the Protective Effect of Atmospheric Corrosion Inhibitors

PERIODICAL: Sb. Kom-t po korrozii i zashchite metallov. Vses. sov. nauchno-tekhn. obshchestv, 1957, Nr 2, pp 14 - 25

ABSTRACT: The most suitable inhibitors to stop an already started process of atmospheric corrosion are volatile inhibitors - amine nitrites and carbonates. Many amine nitrites and amino alcohol sulfides efficiently protect zink, copper and nickel-silver (even if they are in contact with steel) from atmospheric corrosion. The protection of metals from atmospheric corrosion by monoehtanolamine carbonate depends on the joint effect of carbonic acid and monoethanolamine which are formed during the monoethanolamine hydrolysis in the moisture film on the metal surface. The authors draw a general conclusion on the mechanism of protective

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80191
SOV/123-59-23-97191

On the Mechanism of the Protective Effect of Atmospheric Corrosion Inhibitors

effects of vapor-phase or volatile inhibitors: if a given amine salt possesses some definite pressure of vapors, it will, in the vapor-phase state, ensure the protective effect on the metal.

K.L.M.

Card 2/2

PUTILOVA, I.N.; BALEZIN, S.A.

The Second Conference on the Theory of Metal Corrosion Inhibitors.
Zhur.fiz.khim. 31 no.2:522-523 F '57. (MLRA 10:9)
(Moscow--Corrosion and anticorrosives)

SOV/137-58-9-19533

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 201 (USSR)

AUTHOR: Balezin, S.A.

TITLE: Diffusion of Hydrogen During the Acid Pickling of Steel Articles (Diffuziya vodoroda pri kislotnom travlenii stal'nykh izdeliy)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 3-22

ABSTRACT: It is established that in the dissolution of steel in acids the nascent H is distributed in the following manner: A portion of the H forms molecules and is liberated from the solution in the form of gas (the greater part), while a certain portion of the H is absorbed by steel and saturates it. Upon the saturation of steel H passes (diffuses) through the steel, evolves on its opposite surface and forms molecules on it. The rate of diffusion of the H depends on the composition of the steel (the contents of C and additives in it), the heat treatment of the steel, the preparation of the surface, the thickness and the position (horizontal or vertical) of the specimen of steel, the temperature and concentration of the acid, and also the additives introduced into the acid. With a increase of the concentration of H_2SO_4, the hydrogenation of steel increases, but with an

Card 1/2

Diffusion of Hydrogen During the Acid Pickling of Steel Articles

increase in the concentration of HCl it decreases, which is explained by the different action of SO_4^{2-} and Cl^- on the process of the discharge of H^+ ions. All the additives introduced into the etching solutions are divided into inhibitors and stimulators of diffusion. In HNO_3 solutions carbon steel is not hydrogenized in the absence of inhibitors. A series of inhibitors (thiourea, urea, KI, and others), which retard the dissolution of steel in HNO_3, aid in the hydrogenizing of steel. Bibliography: 18 references.

T.S.

1. Steel--Pickling 2. Hydrogen--Diffusion

SOV/137-58-11-23108

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 182 (USSR)

AUTHORS: Balezin, S. A., Nikol'skiy, I. V.

TITLE: Effect of Carbon Content in Steel on its Hydrogenizing During Pickling in Nitric-acid Solutions (Vliyaniye soderzhaniya ugleroda v stali na navodorozhivaniye yeye pri travlenii v rastvorakh azotnoy kisloty)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 23-26

ABSTRACT: Steel with various carbon content: 0.17, 0.6, 0.9, and 1.1% was used in the investigation. Before the tests the specimens were tempered in air at 600°C for 1 hour and pickled for 15 min. The rate of corrosion was determined by the gravimetric method. It was established that with the increase in the content of C in steel the rate of its dissolution in HNO_3 decreases. No adsorption of H is observed in steel on pickling in 1.5 and 2N HNO_3 solutions, whereas hydrogenation takes place in the 0.5N solution. The authors noted an insigificant tendency towards a decrease in the amount of H with the increase of carbon content in steel from 0.17% to 1.1%.

L. A.

Card 1/1

SOV/137-58-9-19492

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 194 (USSR)

AUTHORS: Balezin, S.A., Ratinov, V.B.

TITLE: Acid Corrosion of Nitrided Steel (Korroziya azotirovannoy stali kislotami)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 43-50

ABSTRACT: The corrosion (C) of nitrided 38KMYuA grade steel in H_2SO_4, HNO_3, and acetic and formic acids was investigated. The most agressive of these is H_2SO_4. In H_2SO_4 the specimens are subjected to visible local C, which is most distinct in solutions of 0.005-0.1 concentration. With an increase in H_2SO_4 concentration the local and the general C of the nitrided layer is increased. The irregular dissolution is caused by the nitrogenation because nonnitrided steel under similar condition is subjected to weaker and uniform C. In dilute solutions of H_2SO_4, the nitrided steel, along the border of the three phases (metal, solution, paraffin or vaseline is subjected to linearly selective C, which reaches a maximum in 0.02-0.06N H_2SO_4 solutions, whereas in more concentrated solutions (0.5-1N) it

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SOV/137-58-9-19492

Acid Corrosion of Nitrided Steel

is practically nonexistent. An increase in the temperature of the solution to 30-40°C increases the rate of the linearly selective C, but with a further increase in temperature the danger of linear and local C decreases. Bibliography: 22 references.

R.A.

1. Steel--Corrosion 2. Sulphuric acid--Metallurgical effects 3. Nitric acid--Metallurgical effects 4. Steel--Test results

Card 2/2

SOV/137-58-11-23098

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 181 (USSR)

AUTHORS: Balezin, S. A., Klimov, I. I.

TITLE: On the Inhibitors of Aluminum Corrosion in Alkalies (Ob ingibitorakh korrozii alyuminiya v shchelochakh)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 63-65

ABSTRACT: Sulfide (I) and sulfite (II) cellulose alkalies (aqueous extracts from peat) were investigated as possible corrosion-inhibitors in alkalies. It was established that I(extract of 1 ℓ of water from 100 g of air dry peat filtered and evaporated to a syrupy concentration) in the amount of 6% at 20°C decreases the rate of dissolution of Al by 30-35 times. 1% of II in an 0.1N NaOH solution completely protects the metal from dissolution. In 0.5N solution the inhibiting effect is equal to 39.1, in 1N it is 30.3, in 2N solution it slows down the reaction by 5-6 times, and in 3N retards it by 2-3 times. The addition of 0.015% $CdSO_4$ increases the protective properties of I and II. The mechanics of the action is related to the formation of amorphous films on the metal upon the interaction of aluminates with I. On addition of $CdSO_4$ a thin but dense film of Cd is formed.

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V. P.

SOV/137-58-11-23041

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 173 (USSR)

AUTHORS: Balezin, S. A., Babich, L. V.

TITLE: Inhibition of Steel Corrosion Processes in Carbon (Russian Original shows Hydrocarbon. Trans. Note) Tetrachloride (Tormozheniye protsessov korrozii stali v cheterekhkhloristom uglevodorode)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 67-76

ABSTRACT: The effect of the water content of CCl_4 on the corrosion (Cor) of St-20 grade steel at 18-20°C was investigated. It is established that Cor of steel in CCl_4 containing no water begins only 10-12 hours after the beginning of the experiment and ceases after approximately 16 days. In the presence of water the incubation (Russian Original shows "induction" at this point only; Trans. Note) period is absent, as well as the retardation of the rate of Cor in time. To decrease Cor in moist CCl_4, additions of silica gel, phosphoric anhydride, $CaCl_2$, and certain individual organic compounds were investigated. Silica gel inhibits corrosion for six months. Phosphoric anhydride increases the incubation period to 30 days and then decreases Cor to one-tenth. Among the individual organic compounds the best

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inhibitors proved to be orthobenzoic and thiosalicylic acids and pyrocathechin. The inhibiting effect of these compounds is 180, 203, and 9,180 respectively; the incubation period becomes 150, 43, and 45 days. The inhibiting action of these compounds is related to their adsorption by the metallic surface and to the combining of the water in the CCl_4 with the polar group of the compound.

V. P.

SOV/137-58-10-21322

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 125 (USSR)

AUTHORS: Balezin, S. A., Ignat'yeva, M. A.

TITLE: Influence of Organogen Compounds on the Rate of Dissolution of Steel in Mineral Acids (Vliyaniye elementorganicheskikh soyedineniy na skorost' rastvoreniya stali v neorganicheskikh kislotakh)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 77-86

ABSTRACT: A study of the influence of tetraphenyl bromides of elements of the fifth group: [$(C_6H_5)_4PBr$, $(C_6H_5)_4AsBr$, $(C_6H_5)_4SbBr$]; organic compounds containing phosphorus: [$(C_6H_5)_4PCl$, $(C_6H_5)_4PI$, $(C_6H_5)_3CH_3PI$]; diphenyl chlorides of As and Sb: [$(C_6H_5)_2AsCl_2$ and $(C_6H_5)_2SbCl_2$]; and thriphenyl compounds containing N, P, Sb, Bi, and [$(C_6H_5)_3N$, $(C_6H_5)_3P$, $(C_6H_5)_3As$, $(C_6H_5)_3Sb$, $(C_6H_5)_3Bi$], on the rate of dissolution of steel in H_2SO_4 (1 - 10N) and HCl (1 to 5N) solutions at 25°C within 3 - 6 hours. It is shown that the greatest inhibition of the rate of

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Influence of Organogen Compounds on the Rate of Dissolution (cont.)

dissolution of steel in H_2SO_4 takes place with a concentration of the inhibitor as low as 0.5 millimole/ℓ of solution. Upon a further increase in the concentration of the inhibitor the rate of dissolution is almost unchanged. With HCl the inhibiting effect increases without interruption with an increase in the concentration of the inhibitor. In H_2SO_4 inhibited by tetraphenyl halogenides, the rate of dissolution decreases with an increase in the concentration of acid; in HCl the rate increases with the increase in the concentration of the acid. Tetraphenyl bromides and iodides cause a considerable retardation of the process of dissolution in the 25 - 60° temperature range. It is shown that tetraphenyl halogenides affect the rates of anodic and cathodic processes. Tetraphenyl compounds proved to be stronger inhibitors than diphenyl trichlorides. Triphenyl compounds inhibit the dissolution of steel in H_2SO_4 to a still smaller degree.

1. Steel--Decomposition 2. Acids--Chemical reactions 3. Organic compounds--Chemical effects 4. Metal bromides--Chemical effects 5. Metal chlorides --Chemical effects

L. A.

Card 2/2

SOV/137-58-11-23101

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 182 (USSR)

AUTHOR: Balezin, S. A.

TITLE: Investigation of Atmospheric-corrosion Inhibitors (Issledovaniye ingibitorov atmosfernoy korrozii)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Vol 99, pp 99-107

ABSTRACT: It is established that in the presence of comparatively small amounts of inhibitors in water (dimethylamine 0.06%, butylamine 0.08%, ethanolamine 0.05%, and benzylamine 0.05%) a displacement of the E of steel in the solution into the range of positive values is observed. Addition of H_2O_2 to these solutions displaces E still further into the range of positive values, increases the protective action of the inhibitors and decreases the protective concentration (the last two deductions are not applicable to amine nitrites). Additions of reducing agents (for example H_2S) to the solution decreases the displacement of E and increases the protective concentration. Introduction of aggressive gases (SO_2 and HCl) into a moist atmosphere also decreases the protective action of the inhibitors.

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V. P.

SOV/137-58-12-24869

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 124 (USSR)

AUTHORS: Balezin, S. A., Beskov, S. D., Kochetkova, L. I.

TITLE: On the Mechanism of Atmospheric Corrosion and the Protective Action of Volatile Inhibitors (O mekhanizme atmosfernoy korrozii i zashchitnom deystvii letuchikh ingibitorov)

PERIODICAL: Uch. zap. Mosk. gos. ped. in-ta, 1957, Nr 99, pp 109-127

ABSTRACT: By the method of radioactive tracers an investigation was carried out on the adsorption of vapors of monoethanolamine carbonate (I) (containing in the carbonate group a radioactive C^{14} isotope) on reduced Fe and on FeO, Fe_2O_3, Fe_3O_4 and $Fe(OH)_3$ which had been previously held in atmospheres with various moisture contents. It was established that there is no adsorption in pure Fe. In a dry atmosphere there is no adsorption of I on FeO and Fe_2O_3 either, though some absorption of it is observed. Under these conditions formation of an adsorption layer is observed on Fe_3O_4 and $Fe(OH)_3$only; this layer in time becomes desorbed (upon removal of the specimens from the atmosphere saturated with I). In a moist atmosphere the sorption increases and the desorption decreases with an increase in the relative humidity. The highest

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sorption values are observed at a 100% humidity, when liquid-droplet condensation takes place. Under these conditions there is a complete absence of desorption of the compound adsorbed. From a comparison of the character of the adsorption of I and CO_2 under the above conditions a hypothesis is set forth that the mechanism of the action of I is related to the formation on the oxidized moist surface of the metal of a film of Fe carbonates with I adsorbed on it or with the formation of complex compounds, insoluble in water, of Fe hydroxide with amine and carbonic acid. The protection with aminine nitrites presumably follows the same pattern. The authors assume that the greatest protective properties would be afforded by the volatile salts of amines, the acid residue of which forms insoluble compounds with metallic oxides. Bibliography: 30 references.

V. P.

BALEZIN, S.A.; BARANNIK, V.P.; NESMEYANOVA, K.A.; GINTSBERG, S.A.

Corrosion factors and means of protecting needles during long storage. Uch. zap. MGPI 99:151-157 '57.

(MIRA 12:3)

(Steel--Corrosion) (Pins and needles)

BALEZIN, S.A.; SURYKINA, Ye.K.

Use of chromatography for separation of products formed during the condensation of formaldehyde to sugars. Uch. zap. MGPI 99:159-165 '57. (MIRA 12:3)
(Formaldehyde) (Sugars) (Chromatographic analysis)

BALEZIN, S.A., prof.; BESKOV, S.D., prof., red.; DZHATIYEVA, F.Kh., tekhn.red.

[Programs of pedagogical institutes; principles of physical and colloidal chemistry for the faculties of biology, chemistry and the principles of agriculture] Programmy pedagogicheskikh institutov; osnovy fizicheskoi i kolloidnoi khimii dlia fakul'teta biologii, khimii i osnov sel'skogo khoziaistva. Uchpedgiz, 1958. 7 p. (MIRA 12:3)

1. Russia (1917- R.S.F.S.R.) Glavnoye upravleniye vysshikh i srednikh pedagogicheskikh uchebnykh zavedeniy.
(Chemistry, Physical and theoretical)

BALEZIN, STEPAN AFANAS'YEVICH

PHASE I BOOK EXPLOITATION 693

Putilova, Iya Nikolayevna, Balezin, Stepan Afanas'yevich, Barannik, Valeriy Pavlovich

Ingibitory korrozii metallov (Inhibitors of Metal Corrosion) Moscow, Goskhimizdat, 1958. 183 p. 5,000 copies printed.

Ed.: Avramova, N. S.; Tech. Ed.: Shpak, Ye. G.

PURPOSE: The monograph is a manual for engineering and technical personnel engaged in the chemical, metal processing, petroleum industries and other industries where the problem of metal corrosion arises.

COVERAGE: The authors describe corrosion inhibitors for metal found in water, aqueous acid, alkaline and salt solutions, and also corrosion inhibitors for use under ordinary atmospheric conditions and in nonaqueous liquid media. In addition to many practical recommendations and numerous experiments, the authors review the theoretical concepts of the mechanism of action of inhibitors. A classification of inhibitors is also given. The authors thank Professor S. G. Vedenkin for valuable suggestions offered upon review of the manuscript. There are 332 references of which 151 are Soviet, 132 English, 35 German, 10 French, 3 Italian, and 1 Latvian.

Card 1/5

LAPATUKHIN, Veniamin Semenovich; ~~BALEZIN, S.A., prof.~~, retsenzent; ROZENFEL'D, I.L., doktor khim. nauk, red.; TAIROVA, A.L., red. izd-va; MODEL' B.I., tekhn. red.

[Phosphating metals; studying the processes of cold and rapid phosphating] Fosfatirovanie metallov; issledovanie protsessov kholodnogo i uskorennogo fosfatirovaniia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 262 p. (MIRA 11:8)
(Phosphate coating)

BAIKOV, S., doktor khim. nauk

The new chemical elements 101 and 102. Khim. v shkole. no.2:73-74 Mr-Ap '58. (MIRA 11:3)
(Transuranium elements)

SOV/81-59-10-35290

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 10, p 275 (USSR)

AUTHOR: Balezin, S.A.

TITLE: On the Selection of Methods for the Investigation of Corrosion Inhibitors

PERIODICAL: V sb.: Metody issled. ingibitorov korrozii metallov (Vses. sov. nauchno-tekhn. o-v, Nr 7). Moscow, 1958, pp 3-7

ABSTRACT: A review. A diagram of the corrosion tests and the methods of investigation is given. Recommendations are given as to the principal characteristics for describing corrosion and the protective action of corrosion inhibitors.

M.M.

Card 1/1

SOV/81-59-10-35287

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 10, p 274 (USSR)

AUTHORS: Balezin, S.A., Bogatyrev, Ye.V., Kaverziyeva, V.P.

TITLE: Protection of Metal Items Against Atmospheric Corrosion

PERIODICAL: V sb.: Metody issled. ingibitorov korrozii metallov (Vses. sov. nauchno-tekhn. o-v, Nr 7). Moscow, 1958, pp 93-103

ABSTRACT: For protecting metal items (steel, nickel-, tin- and chrome-plated) against corrosion it is proposed to use paper impregnated with a 30% aqueous solution of sodium benzoate (12 g/m^2 of paper). The technology of preparing such a paper is described. The results of the tests of the protective properties of this paper are cited.

M.M.

Card 1/1

BALEZIN S. A.

SOV/81-59-15-53776

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 15, p 267 (USSR)

AUTHORS: Smirnova, I.N., Balezin, S.A.

TITLE: The Method of Investigating the Inhibitors of Corrosion of Cylinders in Internal Combustion Engines

PERIODICAL: V sb.: Metody issled. ingibitorov korrozii metallov (Vses. sov. nauchno-tekhn. o-v, Nr 7), Moscow, 1958, pp 126 - 135

ABSTRACT: Laboratory tests make it possible to establish the effect of the S content in the fuel and of special admixtures on the aggressiveness of combustion products of fuel and on the corrosion rate of metals. At stand tests the effect of admixtures on the wear of piston rings of the engine GAZ-M-20 activated on Fe by the irradiation method was studied. The intensity of the wear was controlled by the activity of the gear box oil, into which pass the wear products of the piston rings. Besides that, the relative quantity of S was determined which was eliminated from the engine by waste gases as well as the pH and the content of SO_4^{2-} in the condensate of these gases; for

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SOV/81-59-15-53776

The Method of Investigating the Inhibitors of Corrosion of Cylinders in Internal Combustion Engines

this purpose active S^{35} was introduced into the fuel. The results of the experiments with amine- and phosphorus-containing admixtures have shown that the introduction of admixtures increases the elimination of corrosion-active S from the engine and so reduces metal wear.

A. Mamet

Card 2/2

RAIKZIN, S.A.; NIKOL'SKIY, I.V.

Appearance of hydrogen brittleness of steel in aqueous solutions of hydrogen sulfide. Zhur. prikl. khim. 31 no.8:1181-1184 Ag '58. (MIRA 11:10)

(Steel--Brittleness) (Hydrogen sulfide)

5.(4)

AUTHORS: Balezin, S. A., Beskov, S. D., Levant, G. Ye., Putilova, I. N., Figurovskiy, N. A. SOV/76-32-12-32/32

TITLE: L. I. Kashtanov (Obituary) - (L. I. Kashtanov (Nekrolog))

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2848 - 2849 (USSR)

ABSTRACT: The deceased, who died on August 18, 1958, was born in Moscow on November 25, 1902. Between 1920 and 1924 he studied at the Moscow State University. While a student, he worked at the Byuro redkikh elementov (Bureau of Rare Elements) where he devoted his studies to titanium, tantalum, molybdenum, tungsten, and uranium. Between 1924 and 1928 he worked in industry (Elektrougli plant (electrode carbon plant) and Moskovskiy kabel'nyy zavod (Moscow Cable Plant)). From 1928 till 1938 he taught at the Moskovskiy torfyanoy institut (Moscow Peat Institute), at first as an assistant, later as a professor. At the same time he was a collaborator of the Laboratoriya khimii uglya (Laboratory for Carbon Chemistry) (1928 - 1932) and of the Institut azota (Nitrogen Institute) (1932 - 1936). During that time he worked in the fields of peat chemistry, chemistry of

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the coals of the Moscow basin, natural gas, structure and hydrogenation of Boghead coal, nitrogenous bases in the generator tar of peat, drying of peat, carboxylic acids in peat. He was one of the first scientists to take up the study of methane cracking. From 1936 onwards he investigated the combustion process of the coal of the Moscow region, which is rich in sulfur, and the utilization of sulfur dioxide. In 1942 he wrote his doctor's treatise on the elimination of sulfur dioxide from the flue gases of Moscow coals rich in sulfur and the production of commercial sulfuric acid. (Ochistka topochnykh gazov mnogosernistykh podmoskovnykh ugley ot sernistogo angidrida s polucheniyem tovarnoy sernoy kisloty). From 1938 onwards Kashtanov was professor of chemistry at the Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute for Chemical Machine Building) and specialized in the field of metal corrosion in fused salt baths. From 1942 to 1944 he organised for the VKVSh (All-Union Committee for University Training) the universities of the Mongolian People's Republic and obtained a professorship for chemistry at the Mongol'skiy universitet (Mongolian University). Between 1944 and 1956 he was professor

of chemistry at the Moskovskiy inzhenerno-ekonomicheskiy institut imeni S. Ordzhonikidze (Moscow Institute for Engineering Economy imeni S. Ordzhonikidze) and from 1956 onwards professor of chemistry at the Vsesoyuznyy zaochnyy mashinostroitel'nyy institut (All-Union Correspondence Institute of Machine Building). He studied oxidation-reduction processes especially the protective effect of some inhibitors. He also dealt with the chemical restauration of ancient Egyptian limestone and with the analysis of ancient Slavic, ancient Siberian and Scythian bronzes. He was the author of about 90 scientific publications. As far as his organizational activities are concerned, he worked as deputy director of the Peat Institute and of the Institute of Chemical Machinery Building, deputy rector of the Mongolian University and head of the university department of the VKVSh. He was awarded the orden trudovogo krasnogo znameni (Order of the Red Workers' Banner) and medals of the Soviet Union. At the time of his death he was carrying out new investigations on oxidation.

5(1) SOV/20-123-5-37/50

AUTHORS: Balezin, S. A., Romanov, V. V., Podobayev, N. I.

TITLE: Study of the Effects of Some Inhibitors on the Formation of Cracks in Metals by Corrosion (Issledovaniye vliyaniya nekotorykh ingibitorov na korrozionnoye rastreskivaniye metallov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 123, Nr 5, pp 902-905 (USSR)

ABSTRACT: The paper under consideration serves the purpose of studying the effects of the inhibitor PB-5 (Ref 5) on the formation of cracks in the stainless austenite steel 1Kh18N9 in a boiling 42 % $MgCl_2$ solution, as well as those of several lubricants to which inhibitors have been added by the same process of brass in the vapor of an ammonia solution (25 %). The chemical composition of the test steel - semifinished sheet steel used without any special heat treatment - is shown in table 1. The samples were subjected to a tension of 30 kG/mm^2 in the device VP-8. From table 2 it can be seen that by the introduction of 0.1 % of inhibitor into the corrosion medium, the surface corrosion process and the formation of cracks in the steel are simultaneously stopped. The inhibitor was still effective at tensions causing a relative extension of the sample $\simeq$ 16 % (Table 3). Table 4 demonstrates that even

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Study of the Effects of Some Inhibitors on the Formation of Cracks in Metals by Corrosion

welded steel is protected against crack formation by the inhibitor PB-5. Brass samples (Cu 68.6; Zn 30.96; Fe 0.09; Al-traces) were subjected to tensions of 30 kG/mm^2 in a special device (Ref 2). Lubricants with added inhibitors, developed by the Kafedra khimii Moskovskiy gorodskoy pedagogicheskiy institut im. V. I. Lenin (Chair of Chemistry the Moscow Municipal Institute of Education imeni V. I. Lenin) and lubricants developed by the TsITM (Tsentral'nyy institut organizatsii truda i mekhanizatsii proizvodstva = Central Institute for Organization of Labor and Mechanization of Industry) OSP, TsITM-19 and TsITM-51 were employed; for purposes of comparison, the lubricants 12-R, 14-R and 18 (developed by S. A. Balezin and V. P. Barannik) were used. Amines and sodium benzoate as 30 % aqueous buffer solutions of pH 7 - 8 were used as inhibitors. Table 5 shows that the lubricants 14-R, 12-R and TsITM-51 essentially reduce the speed of the formation of cracks in the metal, as compared with tests in which no lubricants or pure "pushsalo" were used. In the absence of an inhibitor, the corrosion cracks develop inside the crystallites (Fig 1). Figure 2 shows that the values of the electrode potential are progressively improved (oblagorazhivayutsya) during the first 50 minutes and remain

Study of the Effects of Some Inhibitors on the Formation of Cracks in Metals by Corrosion

unchanged afterwards. In the presence of an inhibitor, these values are shifted into a more negative direction within the first minute. This is followed by their progressive improvement (oblagorazhivaniye). The polarization curves (cathode curves) of figure 3 show an easier polarizability of steel in the presence of the inhibitor. Both the anodic and the cathodic process are inhibited by the inhibitor PB-5, which thus has a mixed effect under the given conditions. In this paper, the protective effect of organic inhibitors in steel and brass could be proved for the first time.- There are 3 figures, 5 tables, and 2 Soviet references.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences, USSR)

PRESENTED: July 31, 1958, by I. P. Bardin, Academician

SUBMITTED: July 18, 1958

BALEZIN, Stepan Afanas'yevich; SAVEL'YEVA, R.N., red.; NATAROV, M.I., tekhn.red.

[Practical work in physical and colloidal chemistry; for students of natural science departments of pedagogical institutes] Praktikum po fizicheskoi i kolloidnoi khimii; dlia studentov estestvennykh fakul'tetov pedagogicheskikh institutov. Moskva, Gos.uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1959. 229 p. (MIRA 12:5)
(Chemistry, Physical and theoretical--Problems, exercises, etc.)

5(4) PHASE I BOOK EXPLOITATION SOV/3053

Balezin, Stepan Afanas'yevich and Grigoriy Stepanovich Parfenov.

Osnovy fizicheskoy i kolloidnoy khimii (Principles of Physical and Colloidal Chemistry) 2d ed., rev. and enl. Moscow, Uchpedgiz, 1959. 439 p. Errata slip inserted. 20,000 copies printed.

Ed.: R.N. Savel'yeva; Tech. Ed.: N.N. Makhova.

PURPOSE: This textbook on physical and colloidal chemistry is intended for students of pedagogical institutes studying natural sciences according to the recently adopted program.

COVERAGE: The book reviews fundamental principles, theories, and laws underlying various phenomena related to physical and colloidal chemistry. The growing importance of physical chemistry as an independent branch of science is emphasized and its various aspects are dealt with in part I of the book. The authors explain the theory of states of matter, review the molecular structure of gases, liquids and solids, and explain basic laws of thermodynamics, thermochemistry, photochemistry and electrochemistry. Properties

Card 1/

of various solutions, electrolytes, substances serving as electrodes, adsorption, osmotic pressure, electrolysis, titration, polarization, chromotographic analysis, and the protection of metals against corrosion are also dealt with. Part II of the book is devoted to colloidal chemistry, the formation of colloid systems, optical and kinetic properties of these systems, ultramicroscopy, nephelometry, sol structure, coagulation of colloids, peptization, high molecular compounds, gelatins in biology and technology, hysteresis, syneresis, polymers, emulsions and foam. The authors express their thanks to V. Barannik, M. Goloshchapov, O. Suvorova, A. Loginov, I. Klimov, A. Tulayeva, G. Kleshcheva, and G. Kuz'mina for their useful remarks and comments which helped to prepare the present edition. There are 40 references, all Soviet.

TABLE OF CONTENTS:

SOURCE: [illegible] Khim[illegible], [illegible]

AUTHOR: Balezin, [illegible] A.; B[illegible]gatyreva, Ye. [illegible]

TITLE: Salts of some aromatic acids as [illegible] of [illegible] of metals in neutral media

CITED SOURCE: St. tr. Voronezhk. otd. Vses. Khim. [illegible]-va im. D. I. Mendeleyeva, vyp. [illegible]

TOPIC TAGS: Salts, aromatic acids, corrosion inhibitors, metals

TRANSLATION: A study was made of the Na-salts of benzoic, phenylacetic, sali[illegible], anthr[illegible], and [illegible] [illegible] of corr-

[illegible]

Card [illegible]

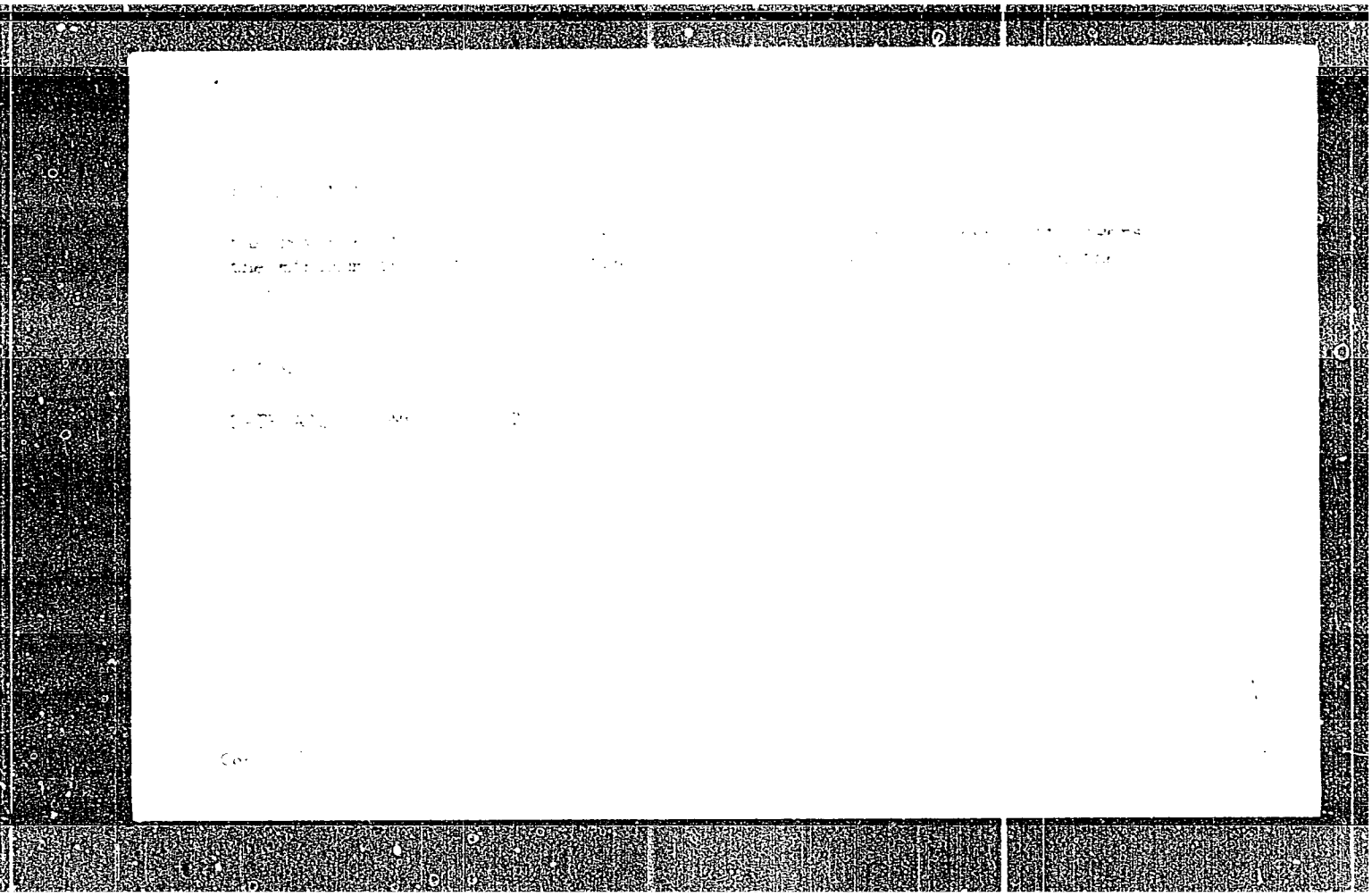
ACCESSION NR: [illegible]

[illegible] comparison with

[illegible]

corrosion of steel in solutions of NaCl, Na-nitrate, Na-sulfate the concentration of which is less than or equal to 0.001 mole/liter. A study was made of the effect of pH on protective properties of IC and it was found that rate of corrosion of steel decreases with increasing pH of aromatic acid solutions and is fully arrested in phenylacetic bufer of pH [illegible] It was as-

[illegible] rate can prevent corrosion of steel in [illegible] water at [illegible]°, sodium [illegible]



BALEZIN, S.A.; KARTSOVNIK, B.A.

Methods for removing grease from metal items. Uch.zap.MGZPI 2:105-117 '59. (MIRA 13:4)
(Metal cleaning)

S/137/61/000/003/068/069
A006/A101

18.8200

AUTHORS: Balezin, S. A., and Nikol'skiy, I. V.

TITLE: On the appearance of hydrogen brittleness of steel in aqueous hydrogen sulfide solutions

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 3, 1961, 59, abstract 3I454 ("Uch. zap. Mosk. gos. zaochn. ped. in-t", 1959, v. 2, 118-123)

TEXT: The authors studied the appearance of hydrogen brittleness in steel during etching in aqueous solution of H_2S. The possibility is shown of the development of hydrogen brittleness in water in the presence of a sulfide film on the surface of parts. There are 25 references, see also RZhMet, no. 4, 1959, abstract 9258.

Ye. L.

[Abstractor's note: Complete translation.]

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18(3) SOV/163-59-2-41/48

AUTHORS: Balezin, S. A., Nikol'skiy, I. V.

TITLE: Hydrogen Brittleness in Steel Poor in Carbon in the Case of Etching in Nitric Acid Solutions (Vodorodnaya khrupkost' malouglerodistoy stali pri yeye travlenii v rastvorakh azotnoy kisloty)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 2, pp 224-226 (USSR)

ABSTRACT: The hydrogen brittleness in steels poor in carbon was investigated in the case of etching in concentrated nitric acid solutions. The change in the brittleness of the steel wire after etching treatment of 30 minutes in different nitric acid concentrations was investigated and the results are given in a table. It was found that the brittleness of the steel samples changes only in nitric acid concentrations up to 1 n. The maximum brittleness in steels poor in carbon occurs in nitric acid concentrations from 0.3 - 0.8 n. There are 1 figure, 1 table, and 5 references, 3 of which are Soviet.

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SOV/163-59-2-41/48

Hydrogen Brittleness in Steel Poor in Carbon in the Case of Etching in Nitric Acid Solutions

ASSOCIATION: Moskovskiy gosudarstvennyy pedagogicheskiy institut im V. I. Lenina
(Moscow State Pedagogical Institute imeni V. I. Lenin)

SUBMITTED: May 20, 1958

Card 2/2

5(2,3)

AUTHORS: Bogatyreva, Ye. V., Balezin, S. A. SCV/153-2-1-5/25

TITLE: Phenyl Acetic Acid Sodium as a Corrosion Inhibitor for Metals in Neutral Media (Feniluksusnokislyy natriy kak zamedlitel' korrozii metallov v neytral'nykh sredakh)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 1, pp 25-29 (USSR)

ABSTRACT: The most efficient inorganic inhibitors (passivators) (Ref 1) exhibit several considerable deficiencies, though wide use is made of them in industries. Either they are poisonous or lead to corrosion at insufficiently low concentrations, etc. These deficiencies are not to be found in some salts of benzoic acid (Refs 2 - 4) and phenyl acetic acid. The properties of the last-mentioned substance have not yet been studied. The authors investigated the above-mentioned subject by using steel in distilled and tap water at natural and increased aeration (for the container see figure 1), as well as in a medium without oxygen (Table 3) in dependence of temperature (Fig 5), of the pH values (Fig 6), and of the presence of Cl^--, SO_4^{2-}- or NO_3^- ions (Table 2).

Card 1/3 Table 1 shows the lowest protective concentrations of sodium

phenyl acetate in the two kinds of water mentioned above, which resulted after a duration of the experiments of eight months. The corrosion samples are contained in figures 2, 4, and 7. Figure 3 shows the dependence of the rate of corrosion of the steel 10 on the logarithm of the concentration of sodium phenyl acetate in both kinds of water. On the basis of the results the authors arrived at the following conclusions: (1) Sodium phenyl acetate decelerates the corrosion in distilled and tap water in the case of steel, chromium-plated and nickeled steel products, tin-plate with bare iron edge, and steel in contact with Al and Cu. Further, the authors determined the minimum protective concentrations of sodium phenyl acetate holding for these products. (2) This salt belongs to the group of harmless ("mild") decelerators. In the case of low concentrations it does not stimulate the corrosion. (3) The salt under consideration ensures the protection of steel along the water line if the workpiece is partially dipped into the solution. (4) In the presence of the afore-mentioned ions the protective properties of this salt deteriorate. In this connection the authors determined the lowest protective concentrations for steel in 0.001 m, 0.01 m, and 0.1 m solutions of NaCl, Na_2SO_4, and $NaNO_3$.

(5) At higher temperatures the protective properties of the salt deteriorate. Its minimum protective concentrations for temperatures of between 20 and 100° were ascertained. (6) Perfect protection of steel is ensured in solutions with a pH value of 5. (7) Increased aeration plays a double part: a) the minimum protective concentration of the inhibitor is lowered; b) this salt passes to the type of "harmful" inhibitor which cause removing corrosion of steel, that is, at concentrations which do not suffice for perfect protection of steel in distilled water. There are 6 figures, 3 tables, and 9 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy pedagogicheskiy institut imeni V. I. Lenina; Kafedra obshchey i analiticheskoy khimii (Moscow State Pedagogical Institute imeni V. I. Lenin, Chair of General and Analytical Chemistry)

SUBMITTED: October 26, 1957

BAIEZIN, S.A.; KLYUCHNIKOV, N.G.

Great scientist and patriot; on the 125th anniversary of the birth of D.I. Mendeleev and 90th anniversary of the discovery of the periodic law. Khim. v shkole 14 no.1:41-46 Ja-F '59. (MIRA 12:2)
(Mendeleev, Dimitrii Ivanovich 1834-1907)

5(2) SOV/80-32-5-25/52

AUTHORS: Bogatyreva, Ye.V., Balezin, S.A.

TITLE: Sodium Salicylate as Inhibitor of Steel Corrosion in Neutral Media

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1071-1076 (USSR)

ABSTRACT: The change of the protective properties of the salts of benzoic acid after introduction of a hydroxyl group in its benzene ring are studied here. The sodium salt of the salicylic acid with the hydroxyl group in ortho-position was used for this purpose. Experiments conducted in distilled and waterpipe water at 18-20°C have shown that sodium salicylate and benzoate are inhibitors of corrosion. A higher concentration of salicylate is needed in order to obtain the same protection. The protection decreases with the increase of carbon in the steel. At higher temperatures the protective films are broken or dissolved, which also reduces the protective properties. In this case the concentration must be increased. Benzoate is active in the temperature interval 20-100°C, but salicylate only at 20-60°C. The presence of Cl', SO_4'' or NO_3' ions in distilled water reduces the protection and makes a higher concentration of the inhibitors necessary. Forced aeration has a double effect: it increases the protection by a

Card 1/2

Sodium Salicylate as Inhibitor of Steel Corrosion in Neutral Media

higher supply of inhibitor to the surface of the metal; but at insufficient concentration of the inhibitor, it increases corrosion by a higher supply of oxygen to unprotected parts. Salicylate has protective properties at pH 6, and benzoate at pH 5.5. The presence of oxygen is necessary for protection. In an oxygen-free atmosphere they loose their protective properties.
There are: 4 tables, 1 graph and 7 references, 1 of which is Soviet and 6 English.

SUBMITTED: November 30, 1957

Card 2/2

BALEZIN, S.A., prof., otv. red.; BESKOV, S.D., prof., red.; POLOSIN, V.S., dots., red.; ZAK, A.L., tekhn. red.

[Corrosion inhibitors for metals; investigations and use] Ingibitory korrozii metallov; issledovanie i primenenie. Moskva, Izd-vo MGPI im. V.I.Lenina, 1960. 304 p., 12 p. (MIRA 15:1)

1. Moscow. Moskovskiy gosudarstvennyy pedagogicheskiy institut. Kafedra obshchey i analiticheskoy khimii.
(Corrosion and anticorrosives)

S/081/61/000/021/034/094
B101/B147

AUTHORS: Balezin, S. A., Pozdnyakova, N. I.

TITLE: Study of the dissolution of steel in organic acids

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 254, abstract 21I112 (Uch. zap. Mosk. gos. ped. in-ta im. V. I. Lenina, no. 4, 1960, 5 - 12)

TEXT: A study of the dissolution of steel 20, particularly in HCOOH, led to the following conclusions: 1) The corrosion of steel in HCOOH proceeds by the same principle as in H_2SO_4 and HCl, i. e., in the electrochemical and chemical way. 2) The rate of corrosion (RC) of steel rises continuously with increasing HCOOH concentration. 3) The aldehyde added to HCOOH reduces the RC of steel. 4) The change in the electrical conductivity of HCOOH at medium concentrations (1 - 10 N) corresponds to the change in RC. At concentrations above 10 N HCOOH, the RC rises while the conductivity drops. [Abstracter's note: Complete translation.]

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BALEZIN, S.A.; NIKOL'SKIY, I.V.

Effect of industrial inhibitors of acid corrosion on the hydrogen embrittlement of steel. Izv.vys.ucheb.zav.; chern. met. no.5:159-162 '60. (MIRA 13:6)

1. Moskovskiy gosudarstvennyy zaochnyy pedagogicheskiy institut.
(Corrosion and anticorrosives) (Steel—Brittleness)

S/123/61/000/011/018/034
A004/A101

188310 25536

AUTHOR: Balezin, S. A.

TITLE: Inhibited greases (their production and investigation results)

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 11, 1961, 85, abstract 11B673 ("[Uch. zap.] Mosk. gos. ped. in-ta im. V. I. Lenina", 1960, no. 146, 5-24)

TEXT: The author presents a technology of manufacturing inhibited greases on the base of low-viscous mineral oils. He describes the methods and the results of comparative tests of the greases for the protection of steel and brass parts. When amine-type inhibitors are added to consistent greases and low-viscous oils, they are effective protection agents of carbon steel parts but not suitable for the protection of copper and its alloys. Greases inhibited by a benzoate buffer effectively protect steel and brass parts under high moisture conditions and in a 3% sodium chloride solution.

S. Karachunskiy

[Abstracter's note: Complete translation]

Card 1/1

BALEZIN, S.A.; BESKOV, S.D.; ZAYTSEV, L.P.

Chemical cleaning of metal surfaces by sand blasting. Uch. zap. MGPI no.146:41-61 '60. (MIRA 15:4)
(Metal cleaning) (Passivation)

25079
S/081/61/000/010/012/029
B117/B206

18.8310

AUTHORS: Balezin, S. A., Kleshcheva, G. V.

TITLE: Phosphates of some amines as corrosion inhibitors for steel-20 in water

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 288, abstract 10M226 (10I226). ("/Uch. zap./ Mosk. gos. ped. in-ta im. V. I. Lenina", no. 146, 1960, 92 - 101)

TEXT: It was established that among monoethanolamine phosphates, trisubstituted monoethanolamine phosphate (0.01 moles/l) has the greatest protective effect as corrosion inhibitor for steel-20 in tap- and distilled water. Disubstituted phosphate (0.04 moles/l) has a lower protective effect, and monosubstituted monoethanolamine phosphate a still lower one. [Abstracter's note: Complete translation.]

Card 1/1

SMIRNOVA, I.N.; BALEZIN, S.A.

Effect of organic additions in fuel on the corrosion and wear of automobile engines. Uch. zap. MGPI no.146:102-126 '60. (MIRA 15:4)

(Engines--Corrosion) (Addition reactions)

S/081/61/000/009/007/015
B101/B205

AUTHORS: Smirnova, I. N., Balezin, S. A., Golovanov, K. N.

TITLE: Effect of organic admixtures to motor fuel on corrosion and wear of internal-combustion engines. (Stand tests of anticorrosive admixtures to motor fuel)

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 9, 1961, 275, abstract 9M233 (9I233) ("Uch. zap. Mosk. gos. ped. in-ta im. V. I. Lenina", 1960, no. 146, 127 - 146)

TEXT: It was found that addition of anticorrosive admixtures to motor fuel leads to intensified removal of corrosive sulfur from the motor. Reduction of the amount of aggressive agent decreases the corrosion of surfaces in the motor. Anticorrosive admixtures inhibit the oxidation of SO_2 to SO_3 but promote the formation of a protective layer on the operating surfaces of the motor. [Abstracter's note: Complete translation.]

Card 1/1

25085

S/081/61/000/010/022/029
B117/B203

18 8310

AUTHORS: Bogatyreva, Ye. V., Balezin, S. A.

TITLE: Organic inhibitors of metal corrosion in neutral media

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 290, abstract 10И243 (10I243). ([Uch. zap.] Mosk. gos. ped. in-ta im. V. I. Lenina, no. 146, 1960, 147-153)

TEXT: It was found that sodium benzoate- and sodium phenyl acetate buffer solutions with pH 7 inhibit the corrosion of steel- and iron anodes in the following contacts: steel - aluminum, steel - copper, steel - nickel, steel - chromium, iron - tin. It is noted that the effect of sodium salicylate, sodium anthranilate, sodium phthalate, and sodium phenyl acetate is identical to that of sodium benzoate. [Abstracter's note: Complete translation.]

Card 1/1

25081
S/081/61/000/010/015/029
B117/B206

18.8310

AUTHORS: Balezin, S. A., Bogatyreva, V. I.

TITLE: Effect of organic inhibitors on the electrode potential of steel

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 209, abstract 10 M 232 (10I232). ("[Uch.zap.] Mosk. gos. ped. in-ta im. V. I. Lenina", no.146, 1960, 159-169)

TEXT: The investigation of the electrode potentials of steel with respect to time was made in distilled and tap water, in 0.1 N NaCl standard solutions with various admixtures of Na salts of phenyl acetic, benzoic, salicylic, anthranilic, and phthalic acids. It was established that the initial electrode potentials are shifted in positive direction in electrolytes with admixtures of salts of aromatic acids. It was also found that the electrochemical mechanism of sodium benzoate and sodium phenyl acetate has an inhibiting effect mainly on anodic processes. [Abstracter's note: Complete translation.]

Card 1/1

25082
S/081/61/000/010/018/029
B117/B206

18.8310

AUTHORS: Balezin, S. A., Dobychina, A. M.

TITLE: Investigation of the effect of inhibitors on the rate of dissolution of aluminum- and steel workpieces in hydrochloric acid solutions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 289, abstract 10I236 (10I236). ("[Uch. zap.]Mosk. gos. ped. in-ta im. V.I. Lenina", no.146, 1960, 176-182)

TEXT: It was established that in 1-3% HCl solutions the best inhibitors are: for aluminum alloys: ПБ-5 (PB-5), ПБ-8 (PB-8), and anabasine oxalate, and for steels: PB-5 and Urotropin, and of the mixtures, Urotropin and PB-5 at a ratio of 2.5% : 0.5%. [Abstracter's note: Complete translation.]

Card 1/1

S/081/61/000/010/016/029
B117/B206

18831D

AUTHORS: Balezin, S. A., Romanov, V. V., Podobayev, N. I.

TITLE: Investigation of the effect of some inhibitors on corrosion cracking of metals

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 289, abstract 10И233 (10I233). ("Uch. zap. Mosk. gos. ped. in-ta im. V.I. Lenina", no.146, 1960, 183-192)

TEXT: It was established that an amount of 0.1% of the corrosion inhibitor ПБ-5 (PB-5) prevents corrosion cracking in steel of the type 1Х18Н9 (1Kh18N9) in a boiling 42% $MgCl_2$ solution. The lubricants 14-Р (14-R), 12-Р (12-R), and ЦИТМ-51 (TsITM-51) also delay considerably the cracking of copper in NH_3 vapors. [Abstracter's note: Complete translation.]

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25086
S/081/61/000/010/023/029
B117/B203

18 8310

AUTHORS: Balezin, S. A., Romanov, V. V., Podobayev, N. I.

TITLE: Protective coats in corrosion tests

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 291, abstract 10И 256 (10I256). ([Uch. zap.] Mosk. gos. ped. in-ta im. V. I. Lenina, no. 146, 1960, 193-198)

X

TEXT: The following were found to provide effective protection for aluminum alloys D-16, Ст. 3 (St. 3) in acid, alkaline, and neutral chloride media, and for brass in ammonia medium: perchloro vinyl varnish, bitumen paraffin-, and bitumen wax lubricants, a double coat of perchloro vinyl varnish and wax colophony lubricant and БФ-2 (BF-2) adhesive. [Abstracter's note: Complete translation.]

Card 1/1

18 8310

25076
S/081/61/000/010/009/029
B117/B207

AUTHORS: Balezin, S. A., Zhuravlev, I. M.

TITLE: Joint action of Urotropine and potassium iodide upon the rate of dissolution of steel in sulfuric acid

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 288, abstract 10И221 (10I221). ("[Uch. zap.] Mosk. gos. ped. in-ta im. V. I. Lenina", no. 146, 1960, 199-201)

TEXT: A mixture of 1% Urotropine and 0.1% potassium iodide was found to exert the strongest inhibiting effect upon the corrosion of steel in H_2SO_4. The steel potential is essentially improved by adding this mixture. The substitution of potassium chloride for potassium iodide is recommended for 2.5 N sulfuric acid at 100°C. [Abstracter's note: Complete translation.]

Card 1/1

ROTMISTROVA, G.B.; BALEZIN, S.A.; KUZNETSOVA, N.I.

Protection of pulp extractors with inhibitor containing coatings.
Uch. zap. MGPI no.146:217-223 '60. (MIRA 15:4)
(Protective coatings) (Inhibition (Chemistry))

BABICH, L.V.; BALEZIN, S.A.

Kinetics of iron and steel dissolution in sulfuric acid. Uch. zap. MGPI no.146:277-287 '60. (MIRA 15:4)
(Solution (Chemistry)) (Sulfuric acid)

S/081/61/000/010/017/029
B117/B206

AUTHORS: Balezin, S. A., Rodionova, V. I.

TITLE: Effect of admixtures on the rate of corrosion of zinc in lyes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 289, abstract 10И235 (10I235). ("[Uch. zap.] Mosk. gos. ped. in-ta im. V. I. Lenina", no.146, 1960, 297-303)

TEXT: It was established that Na_2S (0.3% solution) retards the corrosion of zinc in lyes, especially at high temperatures. β-hydroxy-ethyl ammonium nitrite which causes heavy destruction of zinc in lyes may be used for etching galvanized workpieces. [Abstracter's note: Complete translation.]

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BALEZIN, S.A.

Colloidal solutions. Khim.v shkole 15 no.1:8-18 Ja-F '60.
(MIRA 13:5)

(Colloids)

BALEZIN, S.A.; PODOBAYEV, N.I.

Effect of corrosion inhibitors on the corrosive cracking of 1Kh18N9 steel in a solution of $MgCl_2$ boiling at 153°. Zhur. prikl. khim. 33 no.6:1300-1311 Je '60. (MIRA 13:8)

(Steel-Corrosion) (Magnesium chloride)
(Corrosion and anticorrosives)

PODOBAYEV, N.I.; BALEZIN, S.A.; ROMANOV, V.V.

Effect of certain inhibitors and inhibited lubricants on the stability of brass toward corrosive cracking. Zhur. prikl. khim. 33 no.6:1311-1319 Je '60. (MIRA 13:8)
(Brass—Corrosion) (Corrosion and anticorrosives)

25065
S/080/60/033/010/017/029
D216/D306

18.8300

AUTHORS: Podobayev, N.I., and Balezin, S.A.

TITLE: Study of the stress corrosion of steel 1X18H9 (1Kh18N9) in chlorides in the presence of organic inhibitors

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 10, 1960, 2290 - 2300

TEXT: The purpose of the present article was to increase the number of inhibitors capable of being used for protecting stainless steels against SC in chlorides, to study their influence on the electrode reactions, to determine the relationship between the rate of stress corrosion and inhibitor concentration and to verify the protective properties of the most effective inhibitors in other chlorides. Steel 1Kh18N9, being extremely prone to failure by SC in chlorides, was used in the investigation. The specimens were made and prepared for testing by a method described by Bale-

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zin and Podobayev (Ref. 2: ZhPKh, XXXIII, 6, 1300, 1960). The shape and dimensions of the specimens are shown as well as the chemical composition and mechanical properties of the above steel. Stresses were introduced into the metal by uniaxial straining of the specimens in a ten-coiled spring apparatus, mounted on a horizontal beam. The springs were calibrated by means of a DS-1 dynamometer. A 42 % $MgCl_2$ solution at 153° and a saturated Ca solution, boiling at 153°, were used as the corrosive media. Apart from the inhibitors tested earlier by Balezin and co-workers, catapine and the inhibitor I-1-A were tested in the MgCl solution. Catapine [$CH_3(CH_2)_{10}CH_2$  CH_2N ] Cl is a surface-active substance which can be used as an inhibitor in hydrochloric acid pickling solutions. The inhibitor I-1-A is a vat residue produced after volatilization of the oil layer formed during synthesis of 2-methyl-ethyl pyridine. The maximum life of the specimens in the presence of inhibitors when testing in the $MgCl_2$ solution, exceeded the time required for crack formation in the control solution by a factor of 26, and in

Study of the stress ...

the $CaCl_2$ solution, by a factor of 10. The reagents used were chemically pure. The dependence of the rate of SC on inhibitor concentration was studied with respect to two inhibitors, PB-5 and catapine. In order to study the mechanism of retardation of SC by catapine, its influence on the electrode potential of steel and on cathode and anode polarization was studied, as well as the influence of polarization together with the inhibitor on the rate of SC. The authors arrived at the following conclusions: 1) Catapine and I-1-A inhibitors reduce the SC of steel 1Kh18N9 in a 42 % solution at 153°, but do not prevent it completely; 2) Catapine is a mixed inhibitor, which preferentially retards its anode reaction; 3) Inhibitor PB-5 in concentrations of 0.2 % protects steel 1Kh18 N9 from SC in a saturated CaCl solution boiling at 153°; 4) Inhibitors BA-12, PB-5 and catapine form protective phase films on the metal; 5) The dependence of the rate of SC on the concentration of catapine and PB-5 is analogous to the dependence of the rate of SC on the cathode current density (at low current densities) with a cathode polarization derived from an externally imposed

Card 3/4

Study of the stress ...

current. There are 7 figures, 5 tables and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: H.H. Uhlig and I. Lincoln, J. Electrochem. Soc., 105, 6, 325, 1958; T.P. Hoar and I.G. Hines, J. Iron and Steel Inst., 182, 2 124, 1956.

SUBMITTED: February 9, 1960

Card 4/4

S/080/60/033/011/005/014
A003/A001

AUTHORS: Balezin, S. A., Narushevich, N. I.

TITLE: The Effect of Alloying Additions on the Hydrogenization of Steels

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol. 33, No. 11, pp. 2536-2541

TEXT: A review of the literature data showed that the effect of alloying elements on the absorption of hydrogen by steel is little investigated. The effect of the content (in %) of alloying Cr, Ni and Cu additions on the hydrogenization of steel in chemical etching was investigated. A chemically pure 5-n solution of sulfuric acid was used as etching liquid. The quantity of hydrogen absorbed by steel was determined by vacuum-heating on a special apparatus. It was shown that the content of hydrogen dissolved in steel depends on the nature and the quantity of the alloying elements. With an increase in the chromium content from 4.92% to 15.49% the solubility of hydrogen in steel during etching in 5-n sulfuric acid drops sharply. In the dissolution of chromium steels in sulfuric acid the inclination to hydrogen absorption does not depend on the rate of steel dissolution. With an increase in the percentage of chromium content the dissolution rate decreases but the quantity of hydrogen absorbed decreases. With an

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A003/A001

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increase in the nickel content from 4.94% to 15.48% the maximum of hydrogen absorption is reached at 9.74%. In the dissolution of nickel steels in sulfuric acid the dissolution rate and the inclination to hydrogen absorption increase until a nickel content of 9.74% is reached, then they decrease. Steels alloyed with chromium, nickel and copper (each 5%) show the lowest inclination to hydrogen absorption when being dissolved in 5-n H_2SO_4, if they contain all three alloying elements simultaneously. Steels alloyed with nickel and copper absorb less hydrogen then chromium steels. There are 5 figures, 1 table and 13 references: 9 Soviet, 2 German, 1 English, 1 American.

SUBMITTED: February 24, 1960

Card 2/2

ROMANOV, Vsevolod Vladimirovich; BALEZIN, S.A., prof., doktor khim. nauk, otv. red.; YEGOROV, N.G., red. izd-va; VOLKOVA, V.V., tekhn. red.

[Corrosion of magnesium] Korroziia magniia. Moskva, Izd-vo Akad. nauk SSSR, 1961. 66 p. (MIRA 14:8)
(Magnesium—Corrosion)

BALEZIN, S., prof.

Inhibitors are put in operation. NTO 3 no.2:16-21 F '61.
(MIRA 14:3)

1. Zaveduyushchiy kafedroy khimii Moskovskogo gosudarstvennogo pedagogicheskogo instituta imeni V.I. Lenina.
(Corrosion and anti-corrosives) (Inhibition(Chemistry))

S/153/61/004/006/003/008
E091/E453

AUTHORS: Chistyakov, V.M., Balezin, S.A.

TITLE: On the corrosion mechanism of steel in carbon tetrachloride

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnoligiya, v.4, no.6, 1961, 955-967

TEXT: Problems associated with the investigation of the mechanism and kinetics of corrosion of carbon steels in moist carbon tetrachloride are considered. Gravimetric, X-ray analysis, spectrophotometric, electrochemical and chemical methods of investigation were used. Degree of corrosion K and rate of corrosion ρ of specimens of steels 3, 10 and 20 were determined gravimetrically by the loss of weight of the steel specimen Δm by the formulae

$$K = \frac{\Delta m}{s} \ g/m^2 \quad \text{and} \quad \rho = \frac{K}{t} \ g/m^2 \ day$$

On the corrosion mechanism ...

where s - surface area of the specimen and t - time of contact between metal and corrosive medium. The experiments were carried out in special glass vessels, constructed by the authors, cross-sections of which are shown in the paper. The products of corrosion were determined by chemical and X-ray analysis. Electrochemical investigations were carried out by a method proposed by L.G.Gindin. Potentials were measured by means of a calomel electrode and the current of steel-magnesium couples was measured with a microammeter. The electrodes of the macrocouple were insulated with a thin layer of cellulose, which is chemically inert with respect to carbon tetrachloride. The moisture content of carbon tetrachloride was determined by a micromethod by means of calcium hydride, measuring the volume of liberated H_2, and by determining the gain in weight of a dry, grease-free gelatine [illegible] immersed for a specified time into the carbon tetrachloride. It was found that corrosion of steel in carbon tetrachloride occurs only if the moisture content of the latter is above 20%, since adsorption and condensation of water molecules from the bulk of dielectric at the metal surface takes

On the corrosion mechanism ...

place under such conditions. The mechanism of corrosion is electrochemical. The oxygen from the air, together with hydrogen chloride, which is the final product of hydrolysis of carbon tetrachloride, are mainly responsible for corrosion of steel in moist carbon tetrachloride, particularly during the induction period. A study of the kinetics of corrosion of steel in carbon tetrachloride of various moisture contents showed that corrosion occurs in stages. It is concluded that steel can be protected against corrosion in moist carbon tetrachloride either by reducing the moisture content of the latter to below 20% or by permanently preserving and strengthening the natural oxide film. The former method is possible only when the water content of the tetrachloride is low, and when it can be ensured that no moisture enters from without. The latter method of protection is temporary in nature, since eventually the protective oxide film will normally be destroyed. However, application of corrosion inhibitors capable of greatly prolonging the induction period, e.g. benzoic acid, can completely prevent corrosion. There are 8 figures and 9 tables.

S/153/61/004/006/003/008
E091/E453

On the corrosion mechanism ...

ASSOCIATION: Moskovskiy gosudarstvennyy pedagogicheskiy institut im. V.I.Lenina. Kafedra obshchey i analiticheskoy khimii (Moscow State Pedagogical Institut imeni V.I.Lenin. Department of General and Analytical Chemistry)

SUBMITTED: February 22, 1960

Card 4/4

BALEZIN, S.A.

Plasmatic state of matter. Khim. v shkole 16 no.2:17-22 Mr-Ap '61. (MIRA 14:6)
(Plasma (Ionized gases))

BALEZIN, S.A.

Brilliant son of the Russian people. Khim. v shkole 16 no.4:3-10 Jl-Ag '61. (MIRA 14:8)

(Lomonosov, Mikhail Vasil'evich, 1711-1765)

BALEZIN, S.A.; KHITROV, V.A.

Let's improve the training of chemistry teachers. Khim. v shkole 16 no.4:94-95 Jl-Ag '61. (MIRA 14:8)
(Chemistry--Study and teaching)
(Teachers, Training of)

S/080/61/034/011/009/020
D243/D301

AUTHORS: Chistyakov, V.M., and Balezin, S.A.

TITLE: Inhibitors of corrosion of carbon steel in carbon tetrachloride

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 11, 1961, 2460 - 2466

TEXT: The aim was to study the mechanism by which benzoic acid acts as a corrosion inhibitor of carbon steel in carbon tetrachloride in order better to protect steel in all phases of the system CCl_4 - air, CCl_4 - water, water - air. Weight, X-ray, spectrophotometric, electrical and chemical methods of investigation were used. The surface of the steel samples was treated in standard fashion. The samples were then weighed and placed in the corrosion medium. Investigations were conducted mainly at 18-20°C with isolated experiments at 40°C in diffused light in glass vessels with ground glass stoppers. Two specimens and 100 ml. of CCl_4 were placed in each vessel. CCl_4 was moistened with bidistillate of water. The

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Inhibitors of corrosion of carbon ...

corrosion products were removed mechanically and the specimens then washed, dried in a dessicator and weighed. The oxide film on the surface of the steel was reduced by hydrogen at 500°C in 30 mins. From the results it was concluded that benzoic acid molecules are adsorbed on the metal surface, assisting thereby the corrosion process. This physical adsorption becomes in time a process of specific adsorption and chemosorption which improves the protective properties of the developing film. Film formation is a dynamic process, but relatively slow, and proceeds only in the presence of the inhibitor. The film is hydrophobic and usually invisible. Benzoic acid's action depends on the state of the natural oxide film on the surface of the steel, the concentration of inhibitor, the oxygen concentration, CCl_4 moisture content and temperature of the medium. Benzoic acid greatly prolongs the induction period. Nine universal inhibitors, based on benzoic acid, were tested and found to afford carbon steel high protection in all phases of the system. There are 4 figures, 3 tables and 7 references: 3 Soviet-bloc and 4 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: K.W. Salkins, R.W. Hawley,

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Inhibitors of corrosion of carbon ... S/080/61/034/011/009/020
D243/D301

Corrosion Eng., 15, 9, 15-17, 1959; C.K. Rosenbaum, J.W. Walton, J. Am. Chem. Soc., 52, 9, 3568, 1930; C.W. Clifford, Ind. Eng. Ch., 13, 628, 631, 1921; J.J. Fox, A.E. Martin, Proc. Roy. Soc., A 174, 957, 234, 1940.

SUBMITTED: December 12, 1960

Card 3/3

21998

S/076/61/035/004/003/018
B106/B201

18.8310 also 2209, 1043

AUTHORS: Podobayev, N.I., Balezin, S.A., and Romanov, V.V.

TITLE: Effect of some inhibitors upon the corrosive cracking of steel 1X18H9 (1Kh18N9) in a 42-percent $MgCl_2$ solution

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 748 - 753

TEXT: The present paper is in continuation of a previous report (Ref. 1: Dokl. AN SSSR, 123, 902, 1958), where it has been shown for the first time that stainless chrome-nickel steel can be efficiently protected by means of organic ПБ -5 (PB-5) inhibitor against cracking in a boiling (153° C) 42-percent $MgCl_2$ solution. The authors have studied the effect some additions to the boiling $MgCl_2$ solution has upon the protective action of ПБ -5 (PB-5) inhibitor. In addition, the effect of some other inhibitors upon the stability of chrome-nickel steel against cracking in a boiling $MgCl_2$ solution has been established. The investigation was made with steel of the type 1X18H9 (1Kh18N9) which contained 0.08% C,

Card 1/

Effect of some inhibitors ...

18.44% Cr, 9.91% Ni, 1.4% Mn, and 0.56% Si. The method used for the investigation has been already described in the abovementioned reference. As is shown by results, an addition of hydrochloric acid to the $MgCl_2$ solution speeds up the cracking process of steel, and reduces the protective action of the PB-5 inhibitor. If the $MgCl_2$ solution contains 0.1 per cent by volume of HCl (specific gravity 1.19), 0.2% of PB-5 inhibitor is required to prevent the steel from cracking. These results are valid both for welded and for nonwelded steel at initial tensile stresses above the yield point (σ = 30-40 kg/mm^2). Also an addition of 1% of BA -12 (BA-12) inhibitor (polymerization product of benzyl amine and paraformaldehyde) together with 0.04% KI protects the steel from corrosion by the acidified boiling $MgCl_2$ solution. Additions of $FeCl_2$ or $FeCl_3$ to the corroding solution cause the protective action of PB-5 inhibitor to be lost completely; they do not, however, impair that of BA-12 inhibitor. An addition of inhibitors PB-8 (PB-8) (condensation product of monoethanol amine and urotropin), BA-12 (alone), and potassium iodide retards the cracking of steel in a boiling 42-percent $MgCl_2$ so-

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Effect of some inhibitors ...

lution; it cannot, however, prevent corrosion from taking place altogether. Dicyclo hexyl ammonium nitrite (НДА(NDA)) proved to be a bad inhibitor in the magnesium chloride solution. An addition of KI to NDA increases the respective protective action considerably, but it cannot keep off corrosion altogether, either. The measurement of the electrode potential of steel in the corroding solution showed that, with time, the inhibitors raise the potential to certain more positive steady values. This effect becomes stronger with increasing protective action of the inhibitor. It has been found from the polarization curves taken for steel 1Kh18N9 in a boiling $MgCl_2$ solution in the presence of the abovementioned inhibitors (PB-5, PB-8, KI, BA-12, BA-12 + KI) that the action of the inhibitors under consideration consists of a cathodic and an anodic action. The protective effects of the inhibitor and of cathodic polarization strengthen one another, whereas the anodic polarization speeds up the cracking of metal, and reduces the protective action of the inhibitor, without, however, removing it completely. These results show that the mechanism of inhibitor action upon the rate of metal cracking can be clarified with the aid of the polarization diagram of corrosive metal cracking. This

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Effect of some inhibitors ...

method has been suggested by one of the authors already earlier (Ref. 5: V.V. Romanov, Korrozionnoye rastreskivaniye metallov, Mashgiz, M., 1960.). There are 2 figures, 3 tables, and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut metallurgii im. A.A. Baykova
(Institute of Metallurgy imeni A.A. Baykov)

SUBMITTED: July 6, 1959

Card 4/6

NIKOL'SKIY, I.V.; BALEZIN, S.A.

Effect of stirring of an acid used in determining the penetration of hydrogen through iron. Uch. zap. MGZPI no.9:63-66 '62. (MIRA 16:6)

(Iron—Hydrogen content)